practice to protect the various layers of the electroluminescent device from the effects of humidity and the possibility of scratching. Such protection is conveniently afforded by forming a glass or other suitable protective layer 9 over the light-transmitting electrode 7. In a few cases however, the protective layer 9 may be eliminated and the light-transmitting electrodes 7 will then serve as the face of the electroluminescent device. Since protective layer 9 is an insulator and since electricity must be conducted to light-emitting layer 7 to illuminate the device, a cavity is provided in protective layer 9 to expose an electrical connection. Conveniently, the cavity may be produced by masking the light-transmitting electrode 7 before the protective layer 9 is applied. Thus when the masking is removed, the light-transmitting electrode 7 is exposed for electrical contact.

For many applications of electroluminescence, it is desirable to have lead-in conductors extending from the rear of the device through an encapsulating resin layer 19. Pressure type connector studs 17 and 20 are provided for this purpose. Connector stud 20 butts against a printed circuit which comprises a conductor 21 on an insulator 22, such as copper or silver on Mylar or vinyl. The insulator 22 insulates the current carried by lead-in prong 20 from the base electrode 1. A side insulator 6 which is a unitary prolongation of the insulator 22 is folded over the edge of the electroluminescent device to insulate a spring-type, electrical contact clip 15 from the various layers. Conductive clip 15 not only conducts current, but also tightly holds the printed circuit against the electroluminescent device. Since one end of clip 15 is forced against printed conductor 21 and since the other end is in electrical communication with the light-transmitting electrode 9, electricity will be conducted from connector stud 20, through conductor 21 and conductive clip 15 to light-transmitting electrode 9. Connector studs 17 and 20 are held rigidly in place by the encapsulating plastic 19 which surrounds not only the electroluminescent device but also each electrical connection. The electrical connection between the connector studs 17 and 20 results chiefly from the pressure exerted by the stud butting against the respective elements.

Each end of the spring type contact clip 15 is provided with biasing surfaces 23 and 24 which are pressured against the light-transmitting electrode 7 and the conductor 21 respectively. The conductive clip 15 is prepared of hard, spring-type brass, phosphorus bronze or beryllium copper, although tempered steel and resilient aluminum may also be used.

We assemble the electroluminescent device in the manner conventional with the art. But after each of the layers of the device has been formed and before the spring clip 15 has been placed in position, and before pressure type connector studs 17 and 20 are butted against the base electrode 1 and the conductor 21 respectively, we place a small dab of the conductive grease on the contact points. Between the biasing surfaces 23 and 24 and the conductor 21 and light-transmitting electrode 7 we have placed dabs of conductive grease 25 and 26 respectively. Because the pressure contacts made by connector stud 20 contacting the conductor 21 and connector stud 17 contacting the base electrode 1, we place dabs of 27 and 28 respectively of conductive grease.

In this manner, the wetting action of the encapsulating resin on the electrical contacts is eliminated together the prevention of the resin's tendency to seep or draw into close spaces. Upon subsequent encapsulation, a positive and reliable electrical contact will be insured.

Many resins may be used for the encapsulation media and the judicious selection of the proper plastic will depend upon the conditions under which the electroluminescent device will be operated. For example, it is possible to use thermosetting resins such as allyl casting resins, phenolic casting resins, epoxy resins, glycerylphthalate casting resins and polyester casting resins. Additionally, more opaque thermosetting resins such as diallylphthalate molding resins, epoxy molding resins, furan molding resins, melamine formaldehyde molding resins, polyester molding resins, polyacrylate molding resins and ureaformaldehyde resins also have applicability. Furthermore, relatively transparent thermoplastic resins may be used such as methylmethacrylate, cellulose nitrate, ethylcellulose acetate, cellulose propionate, cellulose acetate butyrate or polychlorotrifluoroethylene. Moreover, we may use vinyl-allyl, vinyl-butyral and vinyl-chloride molding resins. But these resins which we have recited are only exemplary of some which may be used for encapsulating our electroluminescent device and are not to be taken as indicative of a complete or entire list of resins which have possible applicability.

As we have stated, the conductive grease which we place between electrical contacts in our device is a dispersion of a very finely divided electrical conductive material such as acetylene black, aluminum, gold, silver, platinum, copper, iron or nickel together with a polymer which is compatible with the encapsulation media, but to which no catalyst has been added. Preferably conductive carbon is used in the grease. The reason for not adding a catalyst is so that permanent fluidity is maintained in the conductive grease even after the encapsulation media has set and hardened. In this manner, an electrically conductive pocket of fluid, viscous grease is maintained so that a barrier is formed against the penetration of encapsulation media. This pocket also eliminates another problem long prevalent in encapsulated lamps, usually as the encapsulating plastic hardens, it tends to shift the contacts and unless a fluid conductive seal is maintained, the circuit would be broken. Many different resins are possible as the dispersant to form the conductive grease. For example, when using an epoxy plastic for encapsulation, the dispersant would normally be an epoxy.

While certain specific embodiments of the invention have been described in detail, the same are intended as illustrative and not in order to limit the invention thereto. The scope of the invention is to be determined by the appended claims.

As our invention we claim:

1. An encapsulated electroluminescent lamp having at least two superposed electrodes, at least one of which is light transmitting, and a layer of light-emitting material including an electroluminescent phosphor interposed between said electrodes; means to conduct current to at least one electrode in said device comprising an electrical connector disposed in electrical conducting relation with said electrode, a fluid layer of electrically conductive grease interposed between said connector and said electrode; an encapsulating layer of hardened resin surrounding said electroluminescent device, said conductive grease, and said electrical connector.

2. The encapsulated electroluminescent device according to claim 1 wherein said electrical connector is spring biased against said electrode.

3. The encapsulated electroluminescent device according to claim 1 wherein said electrical connector is pressure biased against said electrode.

4. An encapsulated electroluminescent device having at least two superposed electrodes, at least one of which is light transmitting and a layer of light emitting material including an electroluminescent phosphor interposed between said electrodes; means to conduct current to at least one electrode in said device comprising, an electrical connector disposed in electrical conducting relation with said electrodes, a fluid layer of an electrically conductive material dispersed in an uncatalyzed polymer interposed between said connector and said electrode; an encapsulating layer of hardened resin surrounding said electroluminescent device, said fluid layer and said electrical connector.